

(d) means for pulsing said ions, transferred from into said pulsing region, into said time-of-flight mass analyzer for mass analysis, and

(e) means for detecting said mass analyzed ions.

### REMARKS

Claim 11 has been amended to correct a typographical error. In comparing claim 11 of the pending application with claim 1 of the 6,020,586 patent, as well as with dependent claim 12 of the pending application, the undersigned realized that a typographical error had been made in element d of claim 11 in that the phrase "transferred from said pulsing region" was not realized to be a parenthetical phrase and should have read "transferred into said pulsing region" which is the way it is written in claim 1 of the '586 patent, as well as in dependent claim 12 of the pending application. Additionally, commas have been added to more clearly set apart the parenthetical aspect of that phrase.

Turning now to the rejection by the Patent Office, the rejection is traversed as follows:

#### Double Patenting Claims Rejection – 35 U.S.C. 101

The Examiner has rejected Claims 11 and 13 as claiming the same invention as that of Claims 1 and 10 of prior U.S. Pat. No. 6,020,586.

The Examiner has objected to Claim 12 as being dependent on rejected base Claim 11, but indicated that Claim 12 would be allowable if it were recast as an Independent claim including all the limitations of Claim 11.

Regarding Claims 11 and 13, the Examiner states in his objection:

"The limitations 'the two dimensional multipole ion guide, which functions as a two dimensional ion trap, and comprises a plurality of spaced apart rods parallel to each other and extending from the entrance end to the exit end and parallel to an axis of the ion beam' as recited in claim 11 of application SN: 09/808,468 are considered to be inherent in the term 'a multipole ion guide' as recited in claim 1 of the Patent No. 6,020,586; since the multipole ion guide is well known in the art and formed by a plurality of spaced apart rods which are parallel to each other and parallel to the axis of the ion beam, and extending from the entrance end to the exit end and also used to trap ions in and scan ions out of the multipole

ion guide to prevent excessive charge buildup in the multipole ion guide as recited in claim 13 of application SN: 09/808,468."

Response:

Claim 11 is currently written in the following form [designations (a), (b), etc. have been added]:

For purposes of this response, claim 11 prior to being amended is reproduced below, although the thrice amended claim 11 should be the one to be considered by the Examiner.

11. (Twice Amended) An apparatus for analyzing chemical species comprising:

(a) a time-of-flight mass analyzer with an ion pulsing region and a detector,

(b) an ion source for producing ions forming an ion beam from said chemical species,

(c) a two-dimensional multipole ion guide having an entrance end where ions enter said ion guide from said ion source and an exit end where ions exit said ion guide, said two-dimensional multipole ion guide functioning as a two-dimensional ion trap, wherein said two-dimensional multipole ion guide comprises a plurality of spaced apart rods parallel to each other and extending from said entrance end to said exit end, said ion beam having an axis thereof which is parallel to said spaced apart rods,

(d) means for pulsing said ions transferred from said pulsing region into said time-of-flight mass analyzer for mass analysis, and

(e) means for detecting said mass analyzed ions.

Claims 1 and 10 of the Patent No. 6,020,586 are:

1. An apparatus for analyzing chemical species comprising:
  - (a) a time-of-flight mass analyzer with ion pulsing region and detector,
  - (b) an ion source configured external to said pulsing region of said time-of-flight mass analyzer for producing ions from said chemical species,
  - (c) a multipole ion guide, said ion guide having an entrance end where said ions enter said ion guide from said ion source and an exit end where said ions exit

said ion guide,

(d) means to controllably trap ions in said ion guide and controllably release ions from said ion guide,

(e) means to transfer said released ions into said pulsing region,

(f) means for pulsing said ions transferred into said pulsing region into said time-of-flight mass analyzer for mass analysis, and

(g) means for detecting said mass analyzed ions with said detector.

10. An apparatus according to claim 1, wherein said ions enter said ion guide during said ion trapping and ion release.

It would appear that Claim 11, elements (a), (b), (d), and (e) of the present application are equivalent, for all practical purposes, to Claim 1, elements (a), (b), (f), and (g), respectively, of the '586 patent.

In that case, the Examiner's rejection of Claim 11 on the basis of 35 U.S.C. 101 would amount to contending that Claim 11, element (c) is the same as the combination of elements (c), (d), and (e) of Claim 1 of the '586 patent.

We disagree with the Examiner's contention, at least for the reason that: Claim 11 element (c) of the '468 application does not include the limitation of the '586 Claim 1 element (e): "means to transfer said released ions into said pulsing region".

While such a feature is described for some embodiments of the invention to facilitate transport of ions upon release from the ion guide into the pulsing region of the time-of-flight analyzer, it is not explained as an essential aspect of the invention. For example, one particular embodiment which does include a "means to transfer said released ions into said pulsing region", in the form of electrostatic lens elements, is describe in column 4, lines 43-48:

"The ions are formed into a primary beam 21 by a multipole ion guide 11 having round rods or hyperbolic rods and are collimated and transferred into the pulsing region 26 of the time-of-flight mass analyzer by transfer ion optic electrostatic lenses 15, 16, and 17."

On the other hand, column 12, lines 29-35 describes an alternative embodiment of the invention which requires no such "means to transfer said released ions into said pulsing region":

"An alternative linear configuration to that shown in FIG. 1 (is) accomplished by combining ion guide exit lens 215 and time-of-flight pulsing lens 223 and eliminating lenses 216 and 217. Pulsing trapped ions from ion guide 211 directly through grid 224 helps to minimize the initial released ion packet width and aids in increasing resolution."

This passage, referring to the embodiment of the invention depicted in Fig. 8, describes the elimination of the "means to transfer said released ions into said pulsing region" by eliminating ion transfer lenses 216 and 217 and combining ion guide exit lens 215 and time-of-flight pulsing lens 223 into one element. Hence, "released ions" from the ion guide enter the time-of-flight pulsing region directly, without any intermediate transfer required, thereby avoiding the need for any "means to transfer said released ions into said pulsing region". In other words, upon release from the ion guide, the released ions are automatically already located within the time-of-flight pulsing region.

Hence, Claim 11 of '468 cannot be considered to describe the same invention as Claim 1 and/or 10 of '586.

Further, Claims 12 and 13, which are dependent on Claim 11, should also be considered allowable.

Submitted herewith is a Terminal Disclaimer thereby providing basis to allow claims 11-13 in view of the above action and comments.

An early notice of allowance is earnestly requested.

Respectfully submitted,

  
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